UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Memorandum

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From: Sarah Levinson, Human Health Risk Assessment Support
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To: Todd Borci, Project Manager
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Subj: Recommendations Regarding Human Health Risk Evaluation of Perchlorate: Application to MMR Project Activities

In response to detections of perchlorate in groundwater samples at MMR, perchlorate has become a chemical of interest at the MMR. Neither EPA nor MA DEP has formally adopted a safe drinking water standard or health advisory for perchlorate in public water supplies. However, the Agencies are aware and are concerned about the potential for perchlorate to cause adverse human health effects (especially on the thyroid) were exposure to occur. As such, the purpose of this letter is to communicate current EPA policy regarding human health risk evaluation of perchlorate in groundwaters. This policy is based upon my communications with the perchlorate chemical manager Annie Jarabek (ORD), Peter Grevatt (OSWER Sr. Scientist HQ), and other EPA Regional toxicologists.

While the issues surrounding risk evaluation of perchlorate are complex and are the subject of review at present, it has been and continues to be the position of EPA that human health risk evaluation of perchlorate should proceed using the provisional oral reference dose (RfD) issued by EPA's NCEA Superfund Technical Support Center of 0.0001 to 0.0005 mg/kg-day. This position was articulated in a guidance of June 18, 1999 from Norine Noonan (ORD) to all Regional Administrators and all Waste and Water Management Division Directors (copy attached). While issued as interim guidance, it was to remain in effect until such time that a final assessment of the hazard to human health posed by exposure to perchlorate was formally adopted and placed on EPA's IRIS database. The range of oral reference doses issued by EPA in 1992 and later revised in 1995 of 0.0001 to 0.0005 mg/kg/day is based on adverse effects of the thyroid gland and has not been superceded by an IRIS value at present.

Since 1995, EPA has attempted to bring the latest available scientific information to bear on a health protective benchmark value for perchlorate and in 1999, EPA released an External Peer Review

Draft document ("Perchlorate Environmental Contamination: Toxicology Review and Risk Characterization"). However, because EPA believes important new studies that were not available in 1999 are either underway or planned and are anticipated to have in impact on the proposed human health risk benchmark, EPA does not recommend use at this time of the 0.0009 mg/kg/day health risk benchmark contained in the 1999 External Review Document. This policy helps to ensure that EPA bases its risk management decisions on the best available peer reviewed science and is consistent with EPA practice that existing toxicity estimates remain in effect until the review process to revise them is completed.

Thus, using the range of provisional oral reference doses (0.0001 to 0.0005 mg/kg-day) suggested be used in this interim period and in keeping with prudent public health measures assuming that a young child (15 kg body weight, 1 l/day water ingestion rate) represents a plausible receptor, the concentration of perchlorate in water that would not exceed the provisional reference dose for a child equates to approximately 2 ppb -8 ppb (1.5 ppb - 7.5 ppb). Were one only concerned about effects on adults (2 l/day ingestion rate, 70 kg body weight), then the concentration of perchlorate in water that would not exceed the provisional reference dose for an adult approximates 4-18 ppb (3.5ppb -17.5 ppb). As the child receptor is consistent with the beneficial use of the aquifer as a public drinking water supply, I strongly advise consideration be given to protecting the young child receptor population for remedial decisions involving perchlorate in groundwater at MMR.

Attachment (EPA Memo from N. Noonan to Regional Administrators 6/18/99)